

I. INTRODUCTION.

Owing to the partial failure of the Soya Bean Experiments on which the writer was originally engaged, an additional problem had to be found to provide sufficient work during the nine months course.

Sugar cane was the crop chosen for this purpose, and from the vast collection of varieties growing on the St. Augustine Experimental Station, B.H.10(12), B 156, and Ba 11569 were selected for detailed study by a system of plant measurements and counts.

One frequently compares varieties of cane by a description of their botanical characters, such as position and shape of bud, width and colour of leaf, etc., and by this method recognition of different varieties in the field is greatly facilitated. However, apart from this fact, an accurate knowledge of the botanical characters of each variety is of little importance from a practical point of view, since it fails to indicate the approximate yield of cane or sugar, and without this valuable information an estimation of its true worth is hard to arrive at.

Cane farmers are invariably faced with the difficult task of choosing a variety suitable to their particular requirements. It is fairly obvious that a variety which will give them the maximum amount of sugar per acre, is the ideal to be aimed at, and consequently they look for a variety which combines to the greatest extent the factors associated with high yields.

The exact nature of these factors, it was hoped, might be made clear by a close investigation into the figures obtained from the counts and measurements of the current experiment.

In the light of present knowledge, the factors of tillering and diameter of shoots, together with others, all play a huge part in influencing the final yield and are therefore of the utmost importance in judging the value of a variety.

A discussion on the variation of these factors within each variety and between each variety for plant canes and first ratoons constitutes the main body of this thesis, together with a note on the accuracy or otherwise of this method in estimating yields in the field.